This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A device for converting between electrical energy and mechanical energy, the device comprising

[at least one]an electroactive polymer having a first active area, the first active area comprising

at least two first active area electrodes and

a first portion of the [at least one] electroactive polymer, the first portion arranged in a manner which causes the first portion to deform in response to a change in electric field provided by the at least two first active area electrodes and/or arranged in a manner which causes a change in electric field in response to deformation of the first portion,

a second portion of the electroactive polymer that stores mechanical input energy in tension,

[a structure coupled with the electroactive polymer for transferring mechanical input energy to the first portion]

wherein the device is arranged such that elastic potential energy of the polymer is substantially independent of deformation of the first portion in response to a change in electric field and/or deformation of the first portion causing a change in electric field [is at least partially assisted by the mechanical input energy].

2. (Previously Presented) The device of claim 1 wherein the mechanical input energy is substantially equal to the elastic energy required to deform the first portion of the electroactive polymer for a part of the deformation.

3. (Previously Presented) The device of claim 2 wherein the mechanical input energy is substantially equal to the elastic energy required to deform the first portion of the electroactive polymer for an entire deformation corresponding to an actuation.

4. (Previously Presented) The device of claim 1 wherein the mechanical input energy is less than the elastic energy required to deform the first portion of the electroactive polymer for a part of the deformation.

5. (Currently Amended) The device of claim 1 wherein [the mechanical input energy is input elastic energy obtained from a second portion of the at least one electroactive polymer] the first portion and the second portion are arranged such that deformation of the first portion includes a direction of expansion that is at least partially linearly aligned with a direction of contraction for the second portion.

6. Cancelled

7. (Currently Amended) The device of claim [5 wherein the second portion is included in the electroactive polymer having the first portion] the device is arranged such that elastic potential energy of the polymer remains substantially constant during deformation of the first portion.

8. (Currently Amended) The device of claim 5 further comprising a second active area, the second active area comprising at least two second active area electrodes and [a third] the second portion of the [at least one] electroactive polymer, the [third] second portion arranged in a manner which causes the [third] second portion to deform in response to a change in electric field provided by the at least two second active area electrodes and/or arranged in a manner which causes a change in electric field in response to deformation of the [third] second portion.

9. (Currently Amended)The device of claim 8 wherein elastic potential energy stored in the [third] second portion during actuation of the second active area at least partially contributes to the mechanical input energy.

10. (Currently Amended) The device of claim 8 wherein the first active area and the second active area are arranged such that deformation of the first portion comprises a direction of contraction that is at least partially linearly aligned with a direction of expansion for the [third] second portion.

11. Cancelled

12. (Currently Amended) The device of claim 8 wherein the [at least one] electroactive polymer is a monolithic polymer.

13. (Original) The device of claim 12 wherein the monolithic polymer has a substantially symmetrical geometry.

14. (Original) The device of claim 12 wherein the first active area and the second active area are arranged substantially symmetrically about a central portion of the monolithic polymer.

15. (Currently Amended) The device of claim 1 wherein the [at least one] electroactive polymer is arranged such that elastic potential energy of the [at least one] electroactive polymer is independent of deformation in response to a change in electric field provided by the at least two first active area electrodes and/or deformation which causes a change in electric field.

16. (Currently Amended) The device of claim 1 [wherein the electroactive polymer includes pre-strain] further comprising one or more structures that constrain deformation of the polymer to move along an equipotential line of substantially constant elastic potential energy.

17. (Currently Amended) The device of claim [1]16 wherein the mechanical input energy is provided by an external load coupled to the [at least one electroactive polymer] one or more constraining structures.

18. (Currently Amended) The device of claim 1 wherein the device is included in one of an actuator, a motor and a generator.

19. (Currently Amended)A device for converting between electrical energy and mechanical energy, the device comprising

at least one electroactive polymer, the at least one electroactive polymer comprising

a first active area, the first active area comprising at least two first active area electrodes and

a first portion of the at least one electroactive polymer, the first portion arranged in a manner which causes the first portion to deform in response to a change in electric field provided by the at least two first active area electrodes and/or arranged in a manner which causes a change in electric field in response to deformation of the first portion,

one or more structures that constrain deformation of the polymer such that [coupled with the first portion for communicating elastic energy to or from the first portion; wherein the at least one electroactive polymer is arranged such that] elastic potential energy of the device, which is the sum of the elastic energy in the device, is substantially independent of deformation of the first portion in response to a change in electric field and/or deformation of the first portion causing a change in electric field.

20. (Previously Presented) The device of claim 19 wherein the at least one electroactive polymer is arranged such that elastic potential energy of the device is substantially constant during deformation of the first portion in response to a change in electric field and/or deformation of the first portion causing a change in electric field.

21. (Previously Presented) The device of claim 20 further comprising a home position having a lower elastic potential energy than the substantially constant elastic potential energy of the device during deformation of the first portion.

22. (Previously Presented) The device of claim 19 further comprising a second active area, the second active area comprising at least two second active area electrodes and a second portion of the at least one electroactive polymer, the second portion arranged in a manner which causes the second portion to deform in response to a change in electric field provided by the at least two second active area electrodes and/or arranged in a manner which causes a change in electric field in response to deformation of the second portion.

23. (Previously Presented) The device of claim 22 wherein the first active area and the second active area are arranged such that deformation of the first portion includes a direction of contraction that is at least partially linearly aligned with a direction of expansion for the second portion.

24. (Original)The device of claim 23 wherein the at least one electroactive polymer is a monolithic polymer that comprises both the first portion and the second portion.

25. (Original)The device of claim 22 wherein the first portion of the at least one electroactive polymer is included in a first electroactive polymer that is mechanically coupled to a second electroactive polymer that comprises the second portion.

26. (Previously Presented) The device of claim 19 wherein the one or more structures constrain deformation of the polymer to move along an equipotential line of substantially constant elastic potential energy [further comprising a mechanism that assists substantially independent elastic potential energy deformation of the device].

27. (Previously Presented) The device of claim 26 wherein the one or more structures provide forces perpendicular to the equipotential line during the deformation [wherein the mechanism is a motion constraint that constrains the deformation of the device].

28. (Previously Presented) A method of using at least one electroactive polymer, the at least one electroactive polymer comprising a first active area, the first active area comprising at least two first active area electrodes and a first portion of the at least one electroactive polymer, the method comprising deflecting the first portion such that elastic potential energy of the at least one electroactive polymer is substantially constant for the deformation.

29. (Previously Presented) The method of claim 28 wherein the deformation is in response to a change in electric field provided by the at least two first active area electrodes.

30. (Original)The method of claim 28 further comprising deflecting a second portion of the at least one electroactive polymer, the second portion included in a second active area having at least two second active area electrodes.

31. (Original)The method of claim 30 wherein deflecting of the second portion is at least partially assisted by elastic energy stored in the first portion.

32. (Original)The method of claim 30 wherein application of a voltage difference to the at least two second active area electrodes begins after application of a voltage difference to the at least two first active area electrodes ends.

33. (Original)The method of claim 30 wherein application of a voltage difference to the at least two second active area electrodes begins while the first portion of the at least one electroactive polymer is contracting.

34. (Original)The method of claim 33 wherein application of a voltage difference to the at least two second active area electrodes begins during the peak elastic contraction of the first portion of the at least one electroactive polymer.

35. (Original)The method of claim 30 wherein actuating the second active area includes a direction of expansion that is at least partially linearly aligned with a direction of contraction of the first active area after actuation.

36. (Previously Presented) The method of claim 30 wherein the first portion and second portion are deformed to move a third portion of the at least one electroactive polymer along a path.

37. (Previously Presented) The method of claim 28 wherein the first portion is deformed in resonant mode.